SECTION 2.3.11

GARCIA RIVER WATERSHED

The Garcia River watershed, located in southern Mendocino County, is a forested watershed with coastal influenced climate in the lower half of the drainage (Figure 2.3.11-1). Steelhead and coho salmon utilize the stream for spawning and rearing, however populations have plummeted in the last decade. The Garcia River is listed under Clean Water Act Section 303(d) for excessive sedimentation and subsequent anadromous salmonid habitat loss.

Portions of the Garcia River are listed under section 303(d) for excessive water temperatures.

WATERSHED DESCRIPTION

The Garcia River watershed comprises approximately 73,223 acres in southwestern Mendocino County. The river flows northwest along the San Andreas Fault Zone for part of its course and then west to the Pacific Ocean. The Garcia River forms an estuary that extends from the ocean to the confluence of Hathaway Creek. It is a forested watershed consisting of mixed conifer (primarily fir and redwood) and hardwood (primarily tan oak and madrone) forests. The lower portion of the watershed, including the estuary, is primarily cropland and contains few if any conifers in the riparian zone. Data from 1991 indicates that the canopy density (with the possible exception of Mill Creek) is generally poor. Further, the component of canopy attributable to coniferous tree species is generally low. This finding correlates with the additional finding that the occurrence of large woody debris (LWD) in these same survey reaches was also generally low.

Beneficial uses of the Garcia River include commercial and sport fishing; cold freshwater habitat; wildlife management; migration of aquatic organisms; spawning, reproduction and early development; and estuarine habitat. Sedimentation is impacting the beneficial uses of the Garcia River watershed. The Clean Water Act requires the establishment of a Total Maximum Daily Load (TMDL) as the mechanism for controlling sediment pollution that is impacting the beneficial uses of the Garcia River watershed.

On October 19, 1993, the United States Environmental Protection Agency (US EPA) placed the Garcia River watershed on the Clean Water Act section 303(d) List of Impaired Waterbodies due to impairment and/or threat of impairment to water quality by sediment. The level of sedimentation in the Garcia River watershed was judged to exceed the existing Water Quality Standards necessary to protect the beneficial uses of the watershed, particularly the cold water fishery. Accelerated erosion from land use practices and other causes is impacting the migration, spawning, reproduction, and early development of cold water fish such as coho salmon and steelhead trout.

Natural events and multiple land uses are responsible to varying degrees for sediment contributions through accelerated erosion and mass wasting and include timber production and harvest, road construction and maintenance, grazing, gravel mining, and agriculture. The period of heaviest timber cutting in the Garcia River watershed was between 1954 and 1961, but industrial and non-industrial timber harvesting continues today. Statistics kept since 1987 indicate that 38,363 acres of the 73,223 acre watershed were harvested from 1987 to 1997 (52% of the basin). Forty-two percent of that harvesting occurred in 1988 and 1989. Most of the harvesting in this period occurred on property owned by Coastal Forestlands, Ltd., with additional harvesting on the Georgia-Pacific Corporation, Louisiana-Pacific Corporation, Bewley, Hanes, Alden and Mailliard properties, as well as that of smaller landowners (<1000 acres). The watershed is all privately owned under multiple ownership. Hillside vineyard development is a concern for production of sediment as land is converted to new vineyards in the future.

A comprehensive watershed description is included in the *Proposed Garcia River Watershed Water Quality Attainment Strategy for Sediment* (Mangelsdorf and Lundborg 1997) and the *Assessment of Aquatic Conditions in the Garcia River Watershed* (NCRWQCB 1997) that were prepared for the development of a Clean Water Act section 303(d) waste load allocation and sediment reduction process.

IMPLEMENTATION STRATEGY

In response to the sedimentation and fisheries issues and concerns for the effects of land use practices in the watershed, the Mendocino County RCD obtained Coastal Conservancy funding for a watershed assessment and enhancement plan. The assessment and restoration strategy, *Garcia River Watershed Enhancement Plan*, completed in 1992, involved considerable local involvement and the creation of the Garcia Watershed Advisory Group (WAG). The Regional Water Board reformed the WAG in preparation for the development of a phased "TMDL" waste load allocation and sediment reduction process pursuant to Clean Water Act Section 303(d). The process resulted in the development of a *Garcia River Watershed Water Quality Attainment Strategy* (WQAS) which proposed specific actions to address erosion and sedimentation while recognizing the work that has already been done in the watershed. The strategy has been revised and renamed to reflect its role as a supporting document to a Basin Plan amendment and is now known as the Reference Document for the Garcia River Watershed Water Quality Attainment Action Plan (Action Plan) for sediment. The Reference Document and the Action Plan are staff-level tools for landowners; land managers; interested public; and state, local and federal resource protection agency personnel to use as an aid for developing and implementing plans to reduce sediment delivery to the Garcia River and its tributaries. Core regulatory type functions, especially regarding ground water contamination, will continue as high priority items on a site-specific basis. A TMDL and implementation plan were adopted by the Regional Water Board in June 2001, and the State Water Resources Control Board in November 2001. Self-directed implementation will be encouraged through education, training, financial assistance, technical assistance, and demonstration projects. A self-directed approach would take advantage of the expertise and incentives offered by a variety of existing State and Federal programs which are geared towards promoting private actions which could have water quality benefits.

Institutional Framework

The *Water Quality Control Plan for the North Coast Region* (Basin Plan) contains specific water quality objectives and implementation programs to protect and enhance identified beneficial uses of water. The over-arching regulatory provisions of the Basin Plan are the Action Plan for Logging, Construction and Associated Activities and the Nonpoint Source Action Plan.

Numerous other efforts have evolved in the watershed since the original watershed enhancement plan that furthered the development of the section 303(d) Action Plan.

- The Mendocino County Board of Supervisors approved a Water Agency gravel management plan funded by a Clean Water Act section 205(j) grant;
- The Mendocino Watershed Service, a nonprofit stream rehabilitation organization, used the President's "Jobs in the Woods" funds for salmonid restoration activities;
- A court settlement following a bentonite spill into a tributary of the Garcia resulted in funds for stream rehabilitation;
- Fish and Game stream restoration funds have been used in the North Fork Garcia River to improve habitat

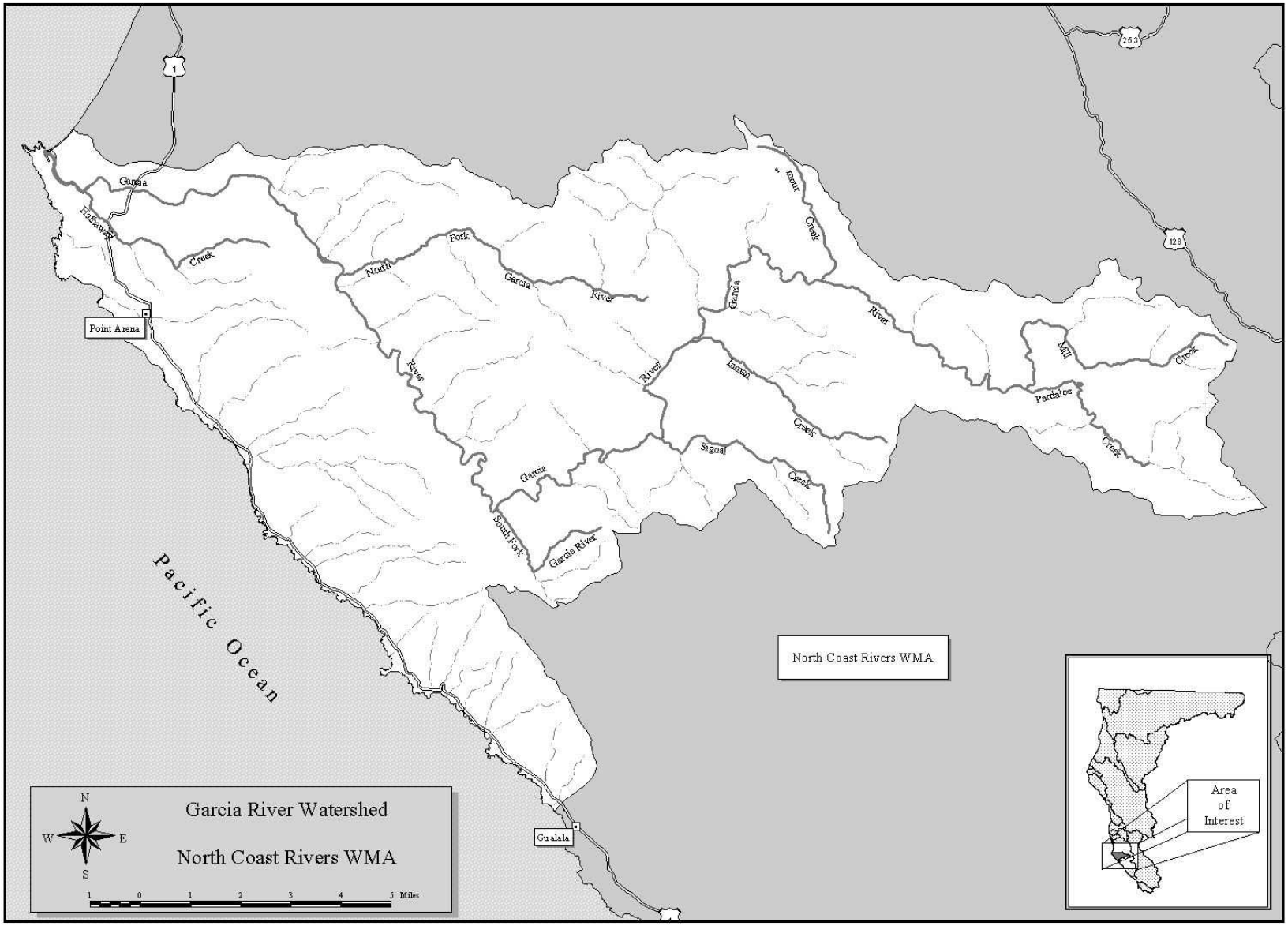

Figure 2.3.11.1 Garcia River Watershed

- The Adopt-a-watershed program is active in the area;
- Coastal Forest Lands (since sold to Pioneer), a timber company that owns most of the North Fork, developed a sustained yield plan (SYP) under the Forest Practice Rules that included watershed management components. Mendocino Redwoods Company (formerly Louisiana-Pacific Corporation) also developed a SYP for their land ownership in the Garcia and made watershed assessment data available to the Regional Water Board staff to assist in the WQAS development;
- The California Department of Forestry and Fire Protection and Board of Forestry targeted the Garcia for a pilot long-term Forest Practice Rules effectiveness monitoring program and;
- The California Resources Agency targeted the Garcia watershed for a pilot data integration effort; the first phase is to develop a metadata listing for access on the World Wide Web through the California Environmental Resources Evaluation System (CERES).

The Regional Water Board effort is focusing on coordinating the above activities and taking actions to reduce erosion and sedimentation to improve salmonid habitat, while satisfying federal and State requirements for Clean Water Act section 303(d). The Action Plan is completed and a formal amendment to the Basin Plan was proposed in January of 1998. Staff returned to the Board with a revised proposal in May of 1998 and another revision in December of 1998. The TMDL and implementation plan was last adopted by the State Water Resources Control Board in November 2000, was approved by the Office of Administrative Law in January 2002, and is now in effect.

The proposed Basin Plan amendment sets a time schedule for addressing sediment sources by type with a final attainment date of 2038. It also incorporates a change to the prohibition regarding sediment discharge in recognition of the impaired status of the Garcia River and proposes three options to obtain relief from fines under the prohibition. The proposed change replaces reference to the prohibition of discharge of sediment in "amounts deleterious" to aquatic life with prohibition of discharge of sediment from "controllable sources" and further defines controllable as human-induced and reasonably controllable.

The three options available to landowners under the proposal are to:

1. avoid controllable discharges of sediment;
2. develop a Site Specific Sedimentation Reduction Plan for their ownership, taking into account watershed conditions and addressing issues on a broad watershed scale as appropriate; or
3. use the measures set forth in the Garcia Watershed Sedimentation Reduction Plan, which are conservative due to the broad application across the entire watershed.

The intent is to focus staff effort and involvement on a priority sub-watershed basis, using criteria for sediment delivery rates, fishery values, and property size in determining which sub-watersheds would be required to submit Statements of Intent detailing their intent to comply with one of the three options or a melding of them. Staff will focus resources on those priority sub-watersheds, providing assistance on the basis of priority.

In addition to the Action Plan, other activities in the watershed are of concern for water quality and will be coordinated within the Regional Water Board and at local levels as appropriate.

Summary of Activities

The primary emphasis in the watershed will be the implementation of the Action Plan for sedimentation reduction, including monitoring. Our core regulatory and toxics site mitigation

activities will continue at their current levels. All landowners engaged in land management activities which result in the discharge of sediment to the stream are encouraged to collect the necessary baseline information, mitigate or control existing and potential sediment delivery sites, and implement fish-friendly land management practices. Instream and hillslope monitoring by landowners is on a voluntary basis. However, most important to the success of controlling sediment is the cooperation and involvement of the largest landowners, including the 10 largest landowners each owning greater than 1000 acres of property in the basin. Without the cooperation and participation of these larger landowners, the overall success of the Action Plan and improvements to the instream environment will be significantly lessened.

Assessment and Monitoring:
The Monitoring Plan is an important component to the overall Action Plan because it will provide the information necessary to make adjustments to the overall assessment as site-specific data are generated and more definitive relationships among hillslope conditions, hillslope activities, and instream conditions are revealed and to assess progress towards attainment of the desired future conditions as expressed by the Numeric Targets. There are 10 landowners in the Garcia River watershed that each owns more than 1000 acres of property in the basin. Their total land holdings cover 81% of the watershed. In order to work efficiently, Regional Water Board staff proposes that those landowners are the staff's highest priority for encouragement and assistance in developing and reviewing proposed Site-Specific Management Plans.

Regional Water Board staff will coordinate instream monitoring efforts of the landowners, other regulatory agencies, academic institutions and members of the public and shall set a goal of establishing at least one instream monitoring point in each of the twelve Planning Watersheds in the Garcia River watershed. In addition, Regional Water Board staff will work together with the University of California Cooperative Extension to assist landowners in developing voluntary monitoring plans.

A monitoring strategy is contained in the Action Plan but needs to be refined. The NCR will work with the UC Extension Service in their rangeland management and monitoring training activities, and major landowners in priority sub-watersheds, as well as promote volunteer monitoring in the watershed. Monitoring for the most part will be supportive of the Action Plan and assist in fine-tuning the numeric targets and implementation measures. First-round TMDL monitoring occurred in the spring of 2000, and SWAMP stations are included for FY 2000-01 for general water quality information at: Garcia River near Point Arena and at Eureka Hill Road bridge, and in the South Fork. Additional details on Regional Water Board monitoring and assessment needs are presented in Appendix 2.3.11-B.

Education and Outreach:
We will continue to support education and outreach, coordinating with the UC Extension Service, Farm Bureau, the California Department of Forestry and Fire Protection and industrial timber companies. Staff level involvement will be on a priority sub-watershed basis.

Coordination:
Coordination with the Mendocino RCD, other restoration efforts, the California departments of Fish and Game and Forestry and Fire Protection, National Marine Fisheries Service, the Garcia WAG, Farm Bureau, local interest groups and others is a necessary part of the phased Action Plan. We will use the sub-watershed prioritization as the primary determining factor for staff involvement.

Core Regulatory:
We plan on maintaining the current level of point source regulation (inspection, monitoring, and enforcement) on traditional dischargers, such as underground tanks, toxic contaminated sites, and sewage treatment works. Involvement in the gravel mining issues will continue under the Action Plan.

Ground water:
Ground water issues center around petroleum and other toxic contamination at specific sites. We will continue cleanup activities at those sites, while working with the Mendocino County Health Department to educate users of agricultural, industrial, and residential tanks on pollution prevention.

Nonpoint Source:
The Action Plan is a phased reduction plan that focuses on sedimentation as the primary nonpoint source problem in the watershed. Several activities are detailed in this summary, including assessment and monitoring, education and outreach, coordination, local contracts, and water quality planning. The Action Plan lays out an approach for inventorying erosion sites and addressing sedimentation problems and constitutes a meld of the Tier 1 and Tier 2 levels of the statewide Nonpoint Source Management Plan. The Rangeland Water Quality Program is an option for part of the agricultural compliance with the Action Plan. Where land management activities are found to be out of compliance with Basin Plan standards, Regional Water Board staff investigation and enforcement actions may be determined necessary.

Vineyards are rapidly expanding in the north coast region. Much of this expansion is occurring on hillsides where there is increased erosion potential and delivery of sediment to nearby streams. The Regional Board staff will need to educate vineyard landowners of best management practices for prevention of increased sedimentation of waters of the State and protection of the beneficial uses of water through an outreach program as conversion of land to vineyards occurs.

Timber Harvest:
We have an extensive Timber Harvest program where staff review and inspect timber harvest plans for implementation of the Forest Practice Rules and best management practices to ensure protection of water quality and beneficial uses. We are expanding our program activities on private land in concert with California Department of Forestry and Fire Protection.

Local Contracts:
We will continue active involvement in the Clean Water Act Section 319(h) and 205(j) grant programs and Water Bond (Proposition 13) grant program, as well as promoting other programs such as the California Department of Fish and Game programs.

Water Quality Planning:
The planning process feeds into the activities to the extent issues are identified for the Garcia WMA:

- Perform Triennial Review of the Basin Plan

Evaluation and Feedback
We plan to evaluate the overall effectiveness of the process on a yearly basis, adjusting the activities as appropriate. Emerging issues of large magnitude or high priority may cause early re-evaluation and shifting priorities.

ASSESSMENT AND PROBLEM IDENTIFICATION

The Garcia River and its tributaries have experienced a reduction in the quality and amount of instream habitat that is capable of fully supporting the beneficial use of a cold-water fishery, due to

increased sedimentation. The acceleration of sediment delivery in the Garcia River watershed due to land management activities has resulted in the reduction of pools necessary for salmonid rearing and the loss or degradation of potential spawning gravel. In addition, the loss or reduction of instream channel structure in the Garcia watershed due to land management activities has contributed to this habitat loss. The existing watershed enhancement plan provides an overview of the problems and identifies specific areas for implementation. The *Water Quality* Action Plan details specific problem areas and sediment sources. The following is an overview and is not intended to duplicate the comprehensive analysis in the Action Plan.

Overview of current and future land uses

Primary land uses are forestry, dairies, grazing, and gravel mining, with little change in the last two decades. The Action Plan or Reference Document contains additional detail on land use and changes over time, which are not repeated in this section.

WATER QUALITY GOALS AND ACTIONS

The Regional Water Board Garcia Watershed Team, composed of staff members familiar with our activities in the WMA, prioritized goals and actions to address issues associated with the goals. The goals and actions, and their priority rankings reflect the desire to address certain issues in a priority fashion. However, the realities of funding constraints and program-related priorities may override the priorities developed by the Team. The Team developed the goals and rankings prior to the development of the Acton Plan.

The broad goals for the WMA include improving the anadromous fishery through sediment reductions and habitat enhancements and maintaining the other high beneficial uses of both surface and ground water. The three goals for the Garcia River are related through the beneficial uses they address:

- **GOAL 1: Protect and enhance salmonid resources (COLD, MIGR, SPWN, RARE)**
- **GOAL 2: Protect and enhance ground water resources and attendant high beneficial uses**
- **GOAL 3: Protect all other surface water uses**

The protection of cold water fisheries (GOAL 1) requires the protection of surface water (GOAL 3) and ground water (GOAL 2) along with additional concerns for siltation, habitat loss, temperature and low tributary flows. Actions to protect the beneficial uses for GOAL 1 (COLD) largely serve to protect all other uses, except MUN.

The NCR adopted the Garcia River Water Quality Action Plan for sediment on December 10, 1998 in fulfillment of section 303(d) of the CWA. The Action Plan is proceeding through the regulatory approval process with the SWRCB, OAL and EPA. Until approval is completed, the NCR is educating and encouraging landowners to implement land use practices to reduce sediment production.

GOAL 1: Protect and enhance salmonid resources (COLD, MIGR, SPWN, RARE)

The anadromous fishery has experienced severe decline in the last 40 years. Natural events and multiple land uses are responsible to varying degrees for sediment contributions through accelerated erosion and mass wasting and include timber production and harvest, road construction and maintenance, grazing, and gravel mining. A decrease in the depth and size of the estuary, as well as increased water temperatures in some parts of the watershed, are at issue. Additional upslope erosion controls are needed to reduce sediment delivery to waterways in the Garcia watershed. We must promote and develop considerations for the stability of stream channels and maintenance of channel form consistent with a functioning hydrologic channel. The riparian and instream habitat components

must be enhanced. Instream temperatures for cold-water habitat and adequate stream flows to protect and enhance salmonid resources and COLD will be managed.

Nonpoint Source Issues

Current Activities

- participate in the THP review team and preharvest inspections
- review and comment on SYPs and HCPs to ensure consistency with the Action Plan
- provide outreach and education to local landowners
- promote 319(h) grants for restoration
- review existing temperature data and collect more to fill data gaps
- list segments for temperature exceedances on CWA Section 303(d) list
- review compliance with the Action Plan
- enforce on violations of the Basin Plan and/or Action Plan
- stay involved in and promote the above considerations in the Section 404 permit process and CDFG 1603 process
- manage the 319(h) Garcia Restoration Project
- supplement the Action Plan by doing the following:
    - inventory landowner and county road problems
    - promote outsloping and rolling dips for roads in the WMA
    - develop specific targets for implementation measures within the WMA
    - request Rangeland Management Plans from ranchers
    - promote specific implementation plans in the Action Plan to address identified sources
    - implement upslope erosion controls
    - manage and maintain properly functioning riparian zone (may include promoting late seral stage coniferous vegetation)
    - keep channel profile, plan, and dimension appropriate for the valley type and slope provide outreach and education to landowners, including outreach for new hillside vineyard development projects promote a “no cut” zone with conifers as a component of the vegetation
    - encourage bridges instead of culverts on fish-bearing streams
    - discourage direct diversion for road watering/dust control

Additional Needs

- identify erosion and sediment sources and potential sources
- implement and monitor the Mendocino County Garcia River Gravel Management Plan
- review effectiveness of current enhancement projects
- monitor, assess, and review areas needing work and determine best option
- support and promote CDFG restoration efforts
- promote and encourage riparian canopy where needed
- promote and encourage maintenance of adequate stream flows
- enhance estuary conditions per the enhancement plan
- Identify erosion and sediment sources and potential sources, including sources related to new development of hillside vineyards
- Conduct outreach on best management practices for hillside vineyards
- consider effects of off-stream water supply pits and channel stability
- provide increased outreach and education to landowners, including outreach for new hillside vineyard development projects

GOAL 2: Protect and enhance ground water resources and attendant high beneficial uses
The underground storage tanks and toxics remediation programs are aimed at addressing the issues associated with this goal. While pollution/contamination issues are site specific and localized, ground water in those areas is an important resource and supports high beneficial uses. Solvents, petroleum, and metals have been detected in the ground water and surface water at the US Air Force's Point Arena Station. A number of small sites are contaminated with petroleum products.

Point Sources Issues

Current Activities

- continue cleanup activities at contaminated sites
- continue the effective individual waste systems program

Nonpoint Source Issues

Current Activities

- work with the Mendocino County Health Department to educate users of agricultural and residential storage tanks on pollution prevention

- work with landowners on best management practices for groundwater protection.

GOAL 3: Protect all other surface water uses
The actions above for GOAL 1 largely serve to protect all other uses, however additional issues with regard to beneficial use impairment may arise in the future. If issues do arise, we will address them through this process.

BUDGET

We will attempt to fund the highest priority actions as identified in this WMA to the extent funding constraints allow that, and will pursue additional funding for those actions we are currently unable to address. Monitoring and assessment needs are detailed in Appendix 2.3.11-B, and nonpoint source activities and needs are contained in Appendix D.

Additional funding to conduct outreach and enforcement activities on new developments of hillside vineyards is needed to pursue the actions we are currently unable to address.

Appendix 2.3.11-A

The following is a list of agencies and groups that are active in or have jurisdiction in the Garcia River watershed.

United States
- Environmental Protection Agency
- Fish and Wildlife Service
- National Marine Fisheries Service
- Natural Resources Conservation Service
- Department of Defense

California State
- California Environmental Protection Agency
- Resources Agency
- Department of Forestry and Fire Protection
- Board of Forestry
- Department of Fish and Game
- Department of Transportation
- Department of Toxic Substance Control
- Department of Water Resources
- California Coastal Conservancy

Mendocino County
- Water Agency
- Planning Department
- Public Works Department

Local Agencies
- City of Point Arena
- Mendocino County Resource Conservation District

Public Interest Groups
- Friends of the Garcia
- Sierra Club
- Mendocino Watershed Service
- CalTrout
- Coast Action Group
- Agricultural Landowners Association
- Mendocino County Farm Bureau

Tribal
- Manchester Rancheria

Appendix 2.3.11-B

Detail of monitoring priorities and needs for the Garcia River watershed WMA

Additional assessment by Regional Water Board staff is needed to test hypotheses about support of beneficial uses MUN, REC1, COLD, RARE, or provide assessment information essential for program implementation. They are currently not funded.

The estimates are Regional Water Board needs on a per year basis with desired fiscal years identified.

1. **Updated Aerial Photos - $37,000 (0.2 PY + $15,000) – FY 04-05**
   Aerial photos will need to be interpreted to evaluate conditions in the watershed and in providing an update to the TMDL and implementation plan.

2. **Additional Water Quality Monitoring - $50,000 (0.2 PY + $28,000) – FY 02-03**
   Additional work is needed to assess sediment in the river. Continuous turbidity monitoring, suspended sediment, and bedload evaluations are needed.

Surface Water Monitoring Program

The SWAMP addressed basic water quality monitoring issues in the WMA in FY 2000-01at three stations: Garcia River near Point Arena, Garcia River at Eureka Hill Road bridge, and South Fork Garcia River

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